

A New Milliped of the Genus *Riukiaria* from Is. Yaku-shima, Japan (Diplopoda: Polydesmida: Xystodesmidae)

TSUTOMU TANABE¹

*Zoological Institute, Faculty of Science, Hokkaido University,
Sapporo 060, Japan*

ABSTRACT—A new species of Xystodesmidae, *Riukiaria jamila*, is described and figured based on male and female adults from Is. Yaku-shima, off the southern coast of Kyūshū, Japan. This species is characterized by the gray tergites, the yellowish white paranota, and the acropodite of the male gonopod which is very wide from the base to the twisted portion.

INTRODUCTION

The genus *Riukiaria* of the family Xystodesmidae is currently represented by approximately 20 species from Japan [1–10], Korea [8, 11] and Taiwan [3, 8, 12, 13]. One species, *R. puella*

Tanabe, is known from Is. Yaku-shima, off the southern coast of Kyūshū, Japan.

In the present paper, I describe a new species of this genus as the second species from that island.

Terminology follows that of Shelley [14] except for parts of the acropodite of the male gonopod.



FIG. 1. *R. jamila* sp. nov., ♂ paratype, dorsal view.

Accepted July 11, 1989

Received April 12, 1989

¹ Present address: Tokushima Prefectural Museum, Tokushima 770, Japan.

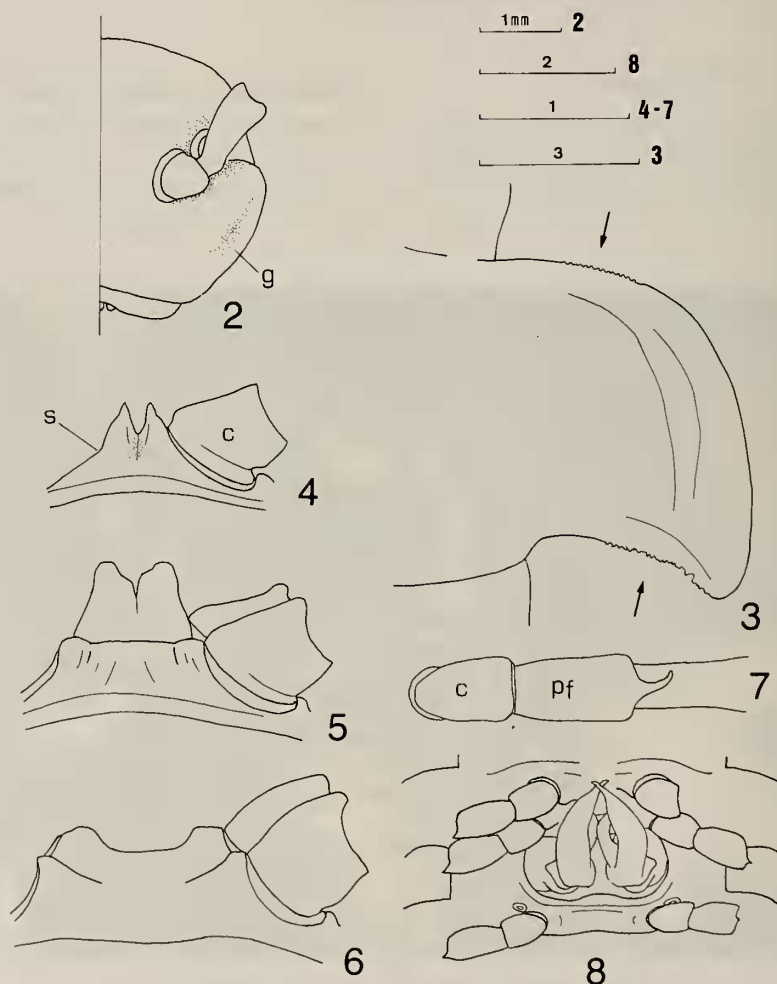
Riukiaria jamila sp. nov.
(Figs. 1–16)

Types: 15 ♂♂ (holotype and paratypes), 12 ♀♀ (paratypes) from the litter of *Ardisia quinquegona*, along Ôko-rindô mountain path, Kurio, Yaku-chô, Is. Yaku-shima, Kumage-gun, Kago-shima-ken, 12-V-1987, T. Tanabe leg. 1 ♂ (paratype), locality as above, 26-IV-1986. A. Moroto leg. The ♂ holotype and 1 ♀ paratype are deposited in the collection of the National Science Museum, Tokyo. 1 ♂ and 1 ♀ paratypes are to be deposited in the collection of the North Carolina

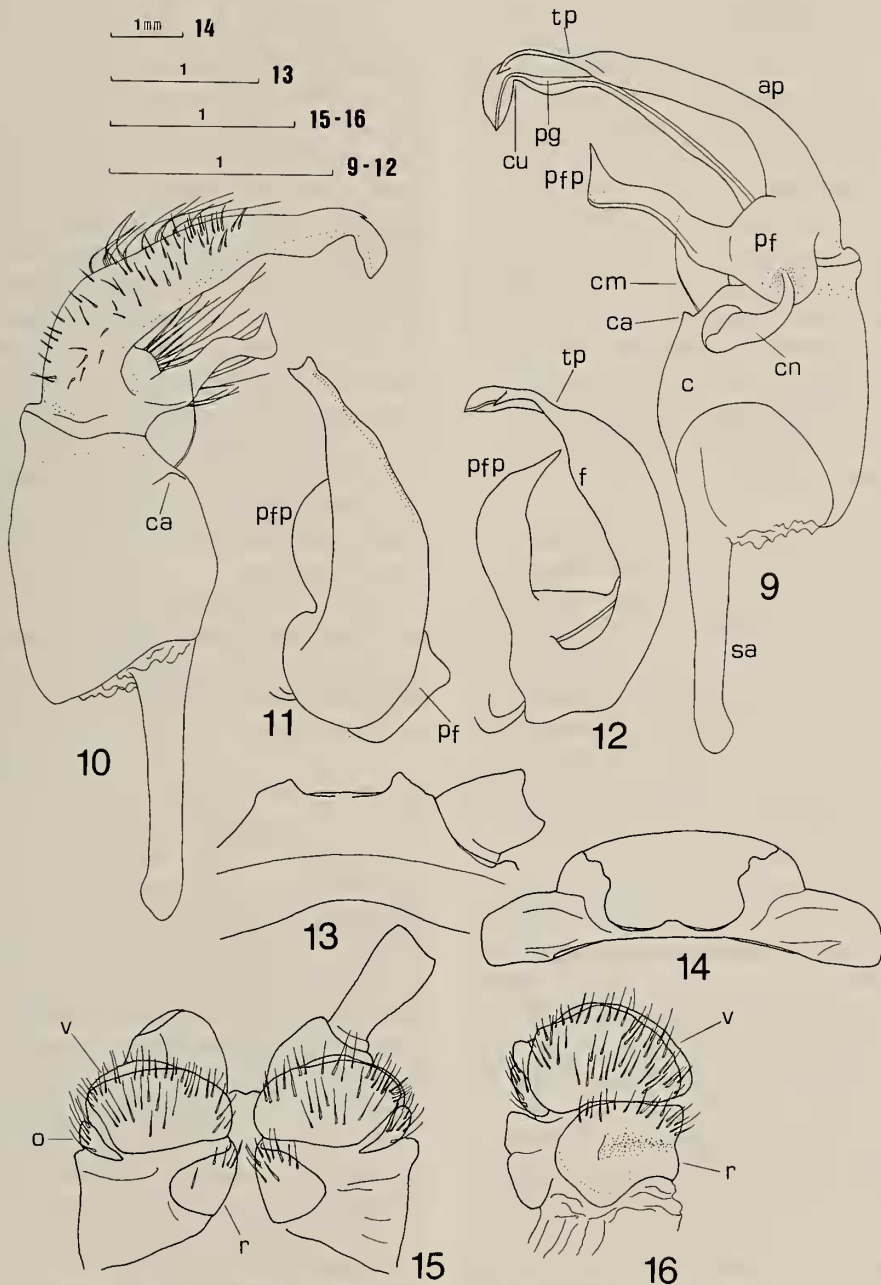
State Museum of Natural Science, Raleigh, NC, USA. 12 ♂♂ and 9 ♀♀ paratypes deposited in my private collection.

Diagnosis: Different from all other species of *Riukiaria* in having gray tergites and yellowish white paranota. The male with following diagnostic characters: Gonopod very wide from the base to the twisted portion, with a small coxal apophysis on anterior face of coxa and an acute medial process at curved portion of acropodite. Fifth sternite with high processes between 4th legs; prefemoral spines curved anterodorsally.

Description. ♂ holotype.



FIGS. 2–8. *R. jamila* sp. nov. 2–7, ♂ holotype: 2, head, anterior view, setae omitted. 3, right paranotum of 8th segment, dorsal view. 4–6, 4th–6th sternites, setae omitted: 4, 4th, posterior view; 5, 5th, posterior view; 6, 6th, posterior view. 7, coxa and prefemur of 10th left leg, ventral view, setae omitted. 8, Gonopods *in situ* of ♂ paratype, ventral view, setae omitted. c, coxa. g, gena. pf, prefemur. s, sternite.



FIGS. 9-16. *R. jamila* sp. nov. 9-12, left gonopod of holotype: 9, medial view, setae omitted except coxa; 10, lateral view, setae omitted; 11, dorsal view, setae omitted; 12, dorsomedial view, setae omitted. 13-15, ♀ paratypes: 13, 5th sternite, anterior view; 14, 4th segment, ventral view; 15, cyphopods, posterior view; 16, left cyphopod, anterior view. ap, acropodite. c, coxa. ca, coxal apophysis. cm, coxal macroseta. cn, cannula. cu, curve. f, flange. o, operculum. pf, prefemur. pfp, prefemoral process. pg, prostatic groove. r, receptacle. sa, sternal apodeme. tp, twisted portion. v, valve.

Head: Capsule smooth, polished. First antennomere subglobose, 2nd-6th clavate, 7th short and truncate; relative length of antennomeres $2=3=4=5=6>1>7$. Genae (Fig. 2) with distinct central impressions. Facial setae as follows: Epicranial 2 (left), 2 (right); inter antennal 1 (left), 1 (right); frontal+genal about 40; clypeal about 30; labral about 25.

Tergites without setae and tubercles, polished. Collum finely coriaceous, somewhat narrower than 2nd tergite. Protergites smooth. Metatergites finely coriaceous, without transverse medial depressions. Paranota (Fig. 3) finely serrate on both anterior and posterior margins; posterolateral corners rounded on segments 1-4, becoming progressively more acute posteriorly. Peritremata distinct. Ozopores located at about posterior 1/3, opening laterally.

Sternites smooth, without setae, polished: 4th sternite (Fig. 4) with a pair of small acuminate processes, about as long as width of adjacent coxae; 5th sternite (Fig. 5) with a pair of high coalesced projections between 4th legs, and a pair of small, flat, widely segregated elevations between 5th legs; 6th sternite (Fig. 6) with a pair of short, flat, widely segregated elevations between 6th legs, and convexly recessed between 7th legs. Postgonopodal sternites without distinct tubercle between any leg pair.

Pregonopodal legs densely hirsute; postgonopodal legs becoming progressively less hirsute posteriorly. Coxae with blunt, indistinct, distomedial projections, but those of 3rd and 4th legs with slightly rounded projection proximomedially. Prefemoral spine beginning on 4th segment, becoming progressively longer posteriorly, pointed bending anterodorsally on midbody (Fig. 7).

Gonopodal aperture elliptical, 2.1 mm wide and 1.1 mm long at midpoint; sides raised above metazonal surface. Gonopods *in situ* as in Fig. 8. Gonopod structure as follows (Figs. 9-12): Coxa with a small coxal apophysis near dorsal margin on anterior face and a macroseta between coxal apophysis and cannula. Sternal apodeme long, straight. Prefemur flat proximolaterally (Fig. 11). Prefemoral process flat, arcuate, tapering into acuminate tip, strongly reflexed in apical half; tip directed laterally. Acropodite thin, leaning antero-

medially, extending beyond level of prefemoral process, twisted at about 3/4 of length, curved dorsally near tip; very wide from base to twisted portion and tapering into acuminate tip, with inner surface broadly excavated from base to twisted portion and medial flange from 1/3 of length to twisted portion; flat from twisted portion to tip, with an acute medial process at curved portion; tip simple. Prostatic groove originating in pit at base of prefemur, running along lateral side of inner surface of acropodite to apical opening.

Color in life: Paranota yellowish white. Metatergites gray. Protergites yellowish white, with transverse gray stripes at midlength. Collum gray, with yellowish white stripes along both anterior and posterior margins. Epicranium pale gray. Face gray. Genae, clypeus, labrum and antennae all yellowish white. Venter and legs yellowish white. Paraprocts yellowish white; each with a central gray spot.

♂♂ paratypes: The ♂♂ paratypes agree with the ♂ holotype in most structural details, except numbers of the following facial setae ($n=5$): Frontal+genal about 25-50; clypeal about 25-30; labral 30-40.

♀♀ paratypes: Somatic features as in male, except numbers of the following features: Facial setae ($n=5$): Frontal+genal about 25-40; clypeal 25-40; labral 25-30. Body more arched, and generally larger. Paranota shorter. 5th sternite (Fig. 13) with a pair of short, flat separated elevations between 4th legs, without processes between 5th legs. 6th sternite without processes. Legs more slender. Coxae of 3rd and 4th legs with no projections proximomedially. Cyphopodal aperture (Fig. 14) with a slight anterior projection of caudal margin. Cyphopods as in Figs. 15 and 16. Valves subequal in size and shape; receptacle projecting at midwidth of dorsal margin and strongly depressed centrally on anterior side, and much smaller in size on posterior side. Coloration somewhat paler than in male.

Measurements: ♂ holotype. Body length 37 mm. Head width (across genal apices) 4.1 mm. Collum: Length/width ratio 47.3%. 10th segment: Protergal width/metatergal width ratio 66.9%. Metatergite of 10th segment: Length/width ratio 27.7%; depth/width ratio 68.3%. Segmental

widths as follows:

Collum 5.5 mm	13–4th 6.4
2nd 5.9	15th 6.2
3rd 6.1	16th 5.9
4th 6.2	17th 5.2
5th 6.3	18th 4.1
6th–12th 6.5	

Paratypes (8 ♂♂, 7 ♀♀ in parentheses). Body length 33–36 mm (34–40 mm). Head width (across genal apices) 3.8–4.1 mm (3.9–4.5 mm). Collum: Width 4.9–5.5 mm (5.0–5.8 mm); length/width ratio 37.5–50.0% (44.0–47.4%). 10th segment: Protergal width/metatergal width ratio 64.5–70.4% (70.5–73.5%). Metatergite of 10th segment: Width 5.9–6.5 mm (6.0–7.1 mm); length/width ratio 27.0–32.7% (26.5–28.6%); depth/width ratio 65.6–68.9% (70.5–74.6%).

Distribution: Known only from the type locality.

Remarks: This species is similar to *R. holstil* (Pocock) from Is. Okinawa-jima, the Ryukyu Islands, but can be distinguished in having gray colored tergites, a pair of high sternal projections between 4th legs of the male, and the acropodite of the male gonopod which is very wide from the base to the twisted portion.

ACKNOWLEDGMENTS

I wish to express my gratitude to Dr. Rowland M. Shelley (North Carolina State Museum of Natural Science) and Dr. H. Katakura (Hokkaido Univ.) for their critical reading of earlier drafts of the manuscript and valuable comments. I am also grateful to Dr. R. L. Hoffman (Virginia Museum of Natural History), Mr. Y. Murakami (Niihama) and Mr. K. Shinohara (Koiwa High School, Tokyo) for their valuable advice and encouragement. Mr. A. Moroto (Mie) kindly offered me a valuable material used in this paper.

REFERENCES

- 1 Pocock, R. I. (1895) Report upon Chilopoda and Diplopoda in the Chinese Seas. *Ann. Mag. Nat. Hist. Ser. 6*, **15**: 346–372.
- 2 Verhoeff, K. W. (1936) Zur Kenntniss ostasiatischer Strongylosomiden und Fontariiden. *Zool. Anz.*, **115**: 297–311.
- 3 Takakuwa, Y. (1942) Über weitere japanische *Rhy-sodesmus* Arten. *Trans. Nat. Hist. Soc. Formosa*, **32**: 197–203.
- 4 Miyosi, Y. (1952) Beiträge zur Kenntniss japanischer Myriopoden 5. Aufsatz: Über zwei neue Arten von Diplopoda. *Zool. Mag. Tokyo*, **61**: 314–316. (In Japanese, with German résumé.)
- 5 Miyosi, Y. (1957) Beiträge zur Kenntniss japanischer Myriopoden 22. Aufsatz: Über zwei neue Arten von Diplopoda. *Zool. Mag. Tokyo*, **66**: 403–406. (In Japanese, with German résumé.)
- 6 Jeekel, C. A. W. (1952) Milliped Miscellany. *Ent. Berichten*, **14**: 71–77.
- 7 Haga, Y. (1968) [Millipeds of Japan 1], 1–11., pls. 1–6. The author. (In Japanese)
- 8 Shinohara, K. (1977) Reevaluation on *Riukiaria* (Diplopoda). *Acta Arachnol.*, **27**: 115–119. (In Japanese)
- 9 Tanabe, T. (1988) Two new species of the genus *Riukiaria* from Kyūshū and Is. Yaku-shima, Japan (Diplopoda: Polydesmida: Xystodesmidae). *Acta Arachnol.*, **37**: 37–45.
- 10 Golovatch, S. I. (1978) Some east Asian millipedes (Diplopoda) in the collection of the Zoological Institute, USSR Academy of Science. *Entomologicheskoe Obozr.*, **57**: 677–681. (In Russian)
- 11 Takakuwa, Y. (1941) *Rhy-sodesmus* Arten aus Japan. *Trans. Nat. Hist. Soc. Formosa*, **31**: 413–415.
- 12 Wang, Y. M. (1956) *Serica* Ie: Records of myriapods on Formosa with description of new species (2). *Quart. Jour. Taiwan Mus.*, **9**: 157–158.
- 13 Wang, Y. M. (1957) *Serica* Ig: Records of myriapods on Taiwan Island (4) six new Polydesmids. *Quart. Jour. Taiwan Mus.*, **10**: 103–111.
- 14 Shelley, R. M. (1981) Revision of the milliped genus *Sigmoria* (Polydesmida: Xystodesmidae). *Mem. Amer. Entomol. Soc.*, No. 33: 140 pp.